Instructions for use and maintenance, part 4

(Translation of the original German instructions for use and maintenance (AWA))

NH90 primary cargo hook fitting
Mod. AM_NH90_SKG13

CE

EC Machinery Directive 2006/42/EC
§ 1 (1) d), annex I, art 1.7, 1.7.4, 1.7.4.2, 4

EASA CS-27./29.865 and corresponding articles; requirements in light of the state of the art fulfilled

Revision C: what is new or has been modified? Watch this symbol C⌦x⌫

Classification

AM_NH90_SKG13 is a lifting accessory in conformity with machinery directive 2006/42/EC, art. 1.d and 2.d.

General description

Primary cargo hook fitting, equipped with an inlet meeting the requirements of NH90 cargo hooks.

The AM_NH90_SKG13 fitting can be attached as follows by employing:

- an SKT-13-8 (short connector compatible with SKG-13-8) and an BK-10-10, BK-13-10, BKD-13-10, LHW-10-10, LHW-13-10 safety hook (see fig. 1 – 3);
- an SKT-13-8 directly attached onto a rope thimble;
- an SKR-13-8 directly connected to a round sling or to the leather-covered thimble of a rope.

The appropriate accessory must be chosen depending on the working load limit (WLL) of the rope employed.

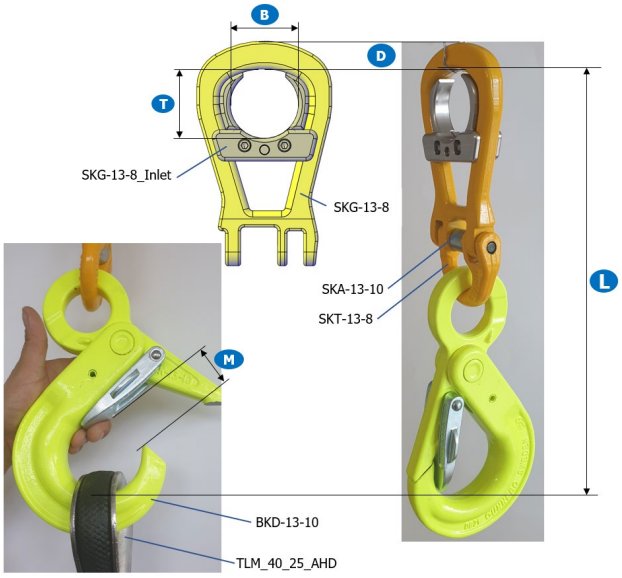
Size and geometric design are calculated to withstand more than the indicated WLL of the helicopter.

EN 1677 fittings, steel quality class 8 (colour yellow) or steel quality class 10 (colour neon yellow).

S259M80Z1001, part 1, primary cargo hook fitting		
Size and steel grade	13-8 and 13-10	Indicated WLL 40 kN
Diameter D	22	Interface to primary cargo hooks of the NH90 type: C⌦Legacy PCH: - AS23-09-01 - AS23-15-01 - AS23-19-01 Enhanced PCH: - AS23-17-01 - AS23-17-11⌫ others on request
Width B	> 50 < 60	
Inner height T	> 50 < 60	
Hook aperture M	40	Interface to TLM_40_25_AHD LongLine
Length L	390	Interface between primary cargo hook and LongLine
Weight in kg	**5.15**	
P/N	**AM_NH90_SKG13**	

Table 1: Dimensions C⌦The choice of lifting hooks has been considerably limited⌫

Fig. 2: For attachment to the PCH, see "start-up procedure"



Figures 1 - 3: BKD safety hook, SKG long suspension link with inlet, general view
Fig. 1: For the attachment of short or long lines, see "Interfaces to other systems"

Fig. 4: AM_NH90_SKG, directly attached onto the rope thimble by means of an SKT-13-8 connex. The shown rope is a firefighting model, TLME_25_2_BW.

Also check AIRBUS documentations and those of the NH90 program.

Conformity

All lifting accessories and slinging equipment by A&H EQU are state of the art products in compliance with EC machinery directive 2006/42/EC, as well as the relevant legislation regarding helicopter aviation, and meet all safety requirements therein.

The products are delivered with an EC declaration of conformity (EC DoC). The instructions for use and maintenance (AWA) can be found at www.air-work.swiss, Equipment/AWA and are usually available in 4 languages.

Use

Correct use

The AM_NH90_SKG13 is used for lifting loads in combination with a transport rope (short or long line) and a load element with swivel (SLE1_5). The AM_NH90_SKG13 is specifically designed to meet the requirements of NH90 primary cargo hooks.

The AM_NH90_SKG13 is hooked to the primary cargo hook by using the SKG-13-8 long suspension link whose inlet ensures a perfect fit in accordance with the requirements of the primary cargo hook.

It is designed to be used only and exclusively in the above mentioned way, that is, for the lifting of loads by means of an NH90 helicopter.

Also check AWA, part 1, 1.9 (Suitability and correct use of work equipment) and 1.12 (Normal, reasonable, correct, foreseeable use/incorrect use/misuse)

Suitability

The AM_NH90_SKG13 is specially designed and manufactured for the loads and dimensions indicated in table 1. It also performs the function of a master link as it provides a fitting meeting the requirements of the primary cargo hook and of any other load lifting device (LLD) or load.

Qualification

All of our lifting and slinging equipment are approved lifting accessories (§ 1.d) in conformity with machinery directive 2006/42/EC and thus classified as machinery; they carry a CE-marking and are delivered with an EC declaration of conformity issued by the manufacturer. Exceptions from this rule are specifically indicated and delivered with a certificate of conformity (COC) or other certificates of compliance according to customer wishes.

Also check AWA, part 1, 1.3 Definition of lifting accessories (LA)

User training

Personnel assigned to using this device must have adequate instruction and training prior to its first use. During the introduction to its use and subsequent in-depth training, particular stress should be placed on gaining a good knowledge of the present instructions for its use and maintenance.

Training has to be repeated at least once a year and proof of this must be demonstrable. Please document the type, amount and the date of training in an appropriate way.

Also check AWA, part 1, 1.1 User training

Your AM_NH90_SKG13 (description of the single components)

Construction and technical data

The fitting AM_NH90_SKG13 is designed and built to carry the maximum external load possible for the type of helicopter used, i.e. for its corresponding weight class, and/or for the intended type of intervention. For example:

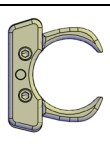
NH90 primary cargo hook = WLL 40kN

- Intended use: general external transport operations, no logging (HESLO 1, 2, 3 and 4; Part-SPO Annex VIII; AMC1 SPO.SPEC.HESLO.100)
- Calculation based on: DGUV Information 214-911, EASA CS-27./29.865 External Loads and related articles.
- Service life: depending on condition; must be replaced if deformed or damaged.

Each individual component of the structure is certified and undergoes regular checks (quality assurance) by the producer on delivery and during manufacturing.

The AM_NH90_SKG13's design and geometry is characterized by an inlet precisely fitted into the long suspension link and an additionally secured safety hook to prevent unintentional opening.

The AM_NH90_SKG13 fitting consists of the following components (when used in combination with a BKD safety latch hook):

BKD-13-10 safety hook	SKT-13-8 half suspension link	SKA-13-10 bolt and sleeve	SKG-13-8 long suspension link	AM_NH90_SKG13 inlet
				

Figures 5 - 9: Components needed for connection to a BKD safety hook

Components needed for direct attachment to a rope:

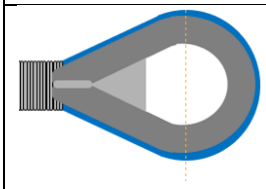
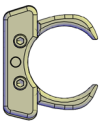
TLME_25_x_BW, rope end finish (thimble)	SKT-13-8 half suspension link	SKA-13-10 bolt and sleeve	SKG-13-8 long suspension link	AM_NH90_SKG13 inlet
				

Fig. 10 - 14

Each individual component of the structure is certified and undergoes regular checks (quality assurance) by the producer on delivery and during manufacturing. Steel quality class 8 or 10 (EN 1677-1). Inlet made of stainless steel type 1.4301.

Special properties

- Size and geometric design are calculated to withstand more than the WLL of the helicopter.
- The AM_NH90_SKG13 fitting is particularly flexible (on 2 axes).
- The safety hook is secured against unintentional opening.

For other configurations and connections see www.air-work.swiss, Equipment

Labels must not be removed. A product without label cannot be considered safe. If you have any questions, please contact the producer.

Parameters, limit conditions, interfaces

Configurations allowed

a) Ropes for the transport of loads

Ropes manufactured by AirWork & Heliseilerei GmbH (A&H), including all their single components, are specifically designed for external load transport by helicopter. The employment of bigger sizes of SLE for smaller loads is consented, but it is forbidden to employ smaller sizes of SLE for bigger loads.

SLE1_5 Safety hook with Connex link | Short or long line (symbolic illustration) | Thimble | AM_NH90_SKG13

Fig. 15 and 16: Configuration

b) Ropes for the transport of firefighting helicopter buckets

For more information, also check AWA part 1, technical definitions

For the lifting and transport of loads, it is compulsory to place a low-torque swivel between the rope and the cargo (rule of technology). Without a low-torque swivel, due to load rotation, the rope can be already irreparably damaged during one flight cycle.

The use of other components by other producers, mainly secondary or remote cargo hooks, can compromise the aforementioned characteristics or lead to dysfunctions (see also AWA part 1, "Warranty" and "Disclaimer").

Fig. 17: TLM_25_2_BW firefighting rope

Helicopter service for professional load transport

See general description in table 1.

Loads allowed; usable limits

- WLL 40 kN
- Bank angle in any direction: 30° (or limited by primary cargo hook specifications indicated in the flight manual).
- Speed with load lifting device attached but without external load (AM_NH90_SKG13, TLM_40_25_AHD and SLE1_5): 140 kts (or limited by NH90 specifications indicated in the flight manuals).
- Speed with load lifting device attached plus external load must be individually tested in flight with respect to every load.

Interfaces to other systems and/or components of a load lifting device

- Extensions of the TLM LongLine by means of a ShortLine or another LongLine of the same quality and payload are possible.
- The attachment of other devices such as an AirTEP or the like directly onto the AM_NH90_SKG13 is possible but in this case it is compulsory to use a swivel load element (e.g. SLE1_5).
- Human external cargo (HEC) during rescue operations, intervention or work flights falls under the responsibility of the operator.

Attachment of a short or long line to the BKD safety hook

When employing a BKD-13-10 safety latch hook, the following special properties must be taken into account:

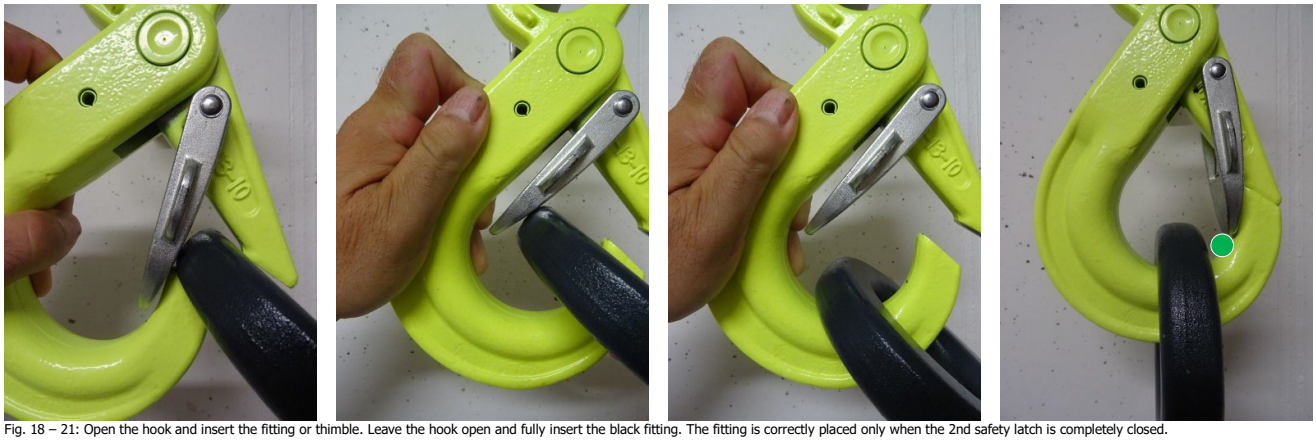


Fig. 18 – 21: Open the hook and insert the fitting or thimble. Leave the hook open and fully insert the black fitting. The fitting is correctly placed only when the 2nd safety latch is completely closed.

Fig: 22 – 24: Misuse! If the hook aperture is closed immediately after having inserted the black fitting, the safety latch cannot be appropriately locked.

The maximum diameter of a fitting to be attached to a BKD-13-10 safety hook is 40 mm, but only when the hook is fully open (see fig. and table 1).

Preliminary procedures

Check the AM_NH90_SKG13: The connecting link and all parts of the safety hook must move freely and be slightly lubricated.

For more information, also read AWA part 2 MRO steel and AWA part 4 SKA-CBHW

Check list for first-time operation

- Do all components have the same performance values (WLL in kN or kg)?
- Are the performance values (WLL in kN or kg) of all LLD components compatible with the helicopter's maximum carrying capacity?
- Do all the connecting links fit with their appropriate connection points (bolt with swivel joint/rope end, safety hooks with thimbles, etc.)?
- Do all accessories of the slinging equipment meet the requirements of the cargo hook manufacturer?
- Are all people involved in the operation adequately instructed regarding the use of the product?

Start-up procedure

Attach the AM_NH90_SKG13 to the primary cargo hook.

Regardless if used with or without a LongLine, make sure that the AM_NH90_SKG13 is not jammed or becomes wedged between the primary cargo hook and the ground.

Fig: 25 – 27: Attach the AM_NH90_SKG13 and check if it moves freely without compromising the functioning of the primary cargo hook.

Jamming during attachment may cause damage to the aircraft, the primary cargo hook and the AM_NH90_SKG13.

Roll out the rope on a flat surface until it is fully extended. During this procedure, make sure that it is not tense and that sharp bends cannot be formed during lifting. Do not drag the rope over the ground more than necessary.

Before hoisting the rope, please make sure that an SLE1 swivel load element has been attached by the training supervisor and that the latter is guiding the rope and the hook with his hand while pulling up the LongLine until the SLE1 leaves the ground.

Load lifting devices have a certain amount of mass and are very mobile leading to the risk that, while oscillating, they may hit persons standing too close.

Guide the rope and the SLE with your hand until the load element is out of the danger zone or until the load is attached and the rope in tension.

End of operation procedure

On ending the flying operation, an instructed person must help the pilot to deposit the rope on the ground. Usually the rope is deposited in a forward direction, within the pilot's field of vision.

In case the pilot is obliged to deposit the rope without the help of an instructed person, make sure that the landing site is big enough (or sufficiently sloping in a rearward direction) to avoid the rope getting caught under the helicopter (skids, wheels, tail rotor).

Depositing the rope and landing the helicopter on the rope:

- **danger caused by rope nooses when the tail rotor draws near the rope;**
- **rope movement caused by down wash.**
- **be careful with skids and landing gear/undercarriages.**

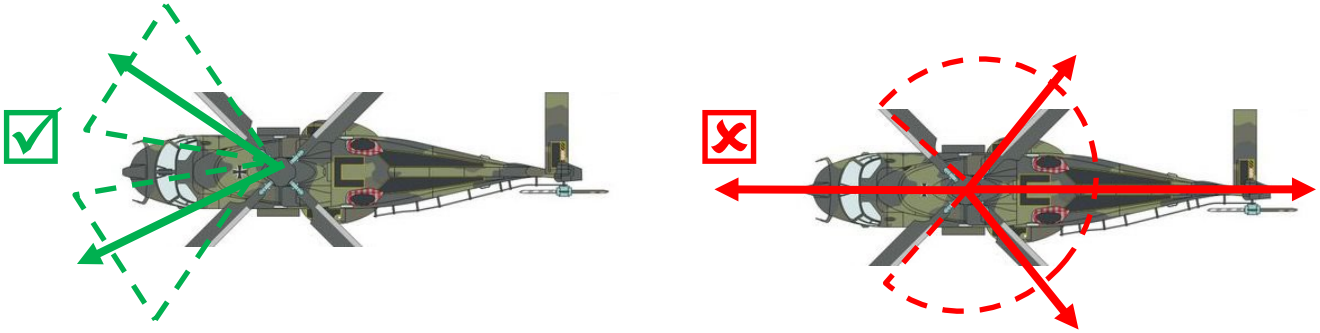


Fig. 28: Helicopter with undercarriage: Depositing of rope on take-off or landing area (symbolic illustration of a NH90, free picture from the web)

Avoid sharp bends, knots or overtorquing of the rope.

Restoration / repackaging of the AM_NH90_SKG13

Before returning, first check the AM_NH90_SKG13, then stow it in a transport bag or hang it up on a hook inside the vehicle.

Transport / Storage

During transport by lorry, the rope must be stored in a bag, case or hung up on a hook and kept far from other equipment or hazardous substances which might damage it.

For storage in a warehouse, please let the AM_NH90_SKG13 hang loose from a hook or place it in an open bag.

Tip for repackaging
Never place the AM_NH90_SKG13 and SLE1_5 at the bottom of a bag as the sack cloth might be damaged when hitting the ground.
The perfect storage solution for the AM_NH90_SKG13 and the SLE1_5 is our rope bag "Tasche_80_AHD".

Possible inappropriate uses

(Ways of using the AM_NH90_SKG13 that are inappropriate and for which it is not designed)

Any use that is not in conformity with the regulations (inappropriate use) of the AM_NH90_SKG13 or its individual components can lead to evident or hidden damages to the same and, therefore, compromise its safety characteristics. In the event of inappropriate use, the producer disclaims all responsibility.

Several examples of inappropriate uses:

Possible inappropriate uses are described in AWA, part 1, 2.2.

Attention: This list is incomplete. Therefore, avoid similar situations that deviate from appropriate use.

Be careful to avoid other possible risks

The following factors could lead to dangerous situations and, therefore, must absolutely be avoided or supervised by a marshaller or another skilled person:

For more information, check AWA part 1

Residual risk

All types of ropes (textile and steel) run the residual risk of internal damage that cannot be seen from the outside. Hence, handling of such devices requires special attention.

Maintenance and repair

Check and read AWA part 2 (maintenance: steel) and 3 (maintenance: textiles)

Engineering & manufacturer

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ISO 9001:2015, SWISO n° 11298658

EASA Part 21 G POA, CH.21.G.0022

NATO NCAGE SAC17

Conditions for product use

This product has been manufactured in compliance with Machinery Directive 2006/42/EC, § 1 (1) d).

These instructions (AWA), in accordance with machinery directive 2006/42/EC, annex I, sections 1.7.4.1 and 1.7.4.2, as well as the EC declaration of conformity in accordance with 2006/42/EC, annex II, are an integral part of this product and must be compiled in the user's or a generally accepted common language. However, only the original German version is legally binding. In absence of valid instructions for use and maintenance (AWA) or without adequate training prior to use of the product, the latter cannot be considered safe.
Gaining a good knowledge of the present AWA must be part of user training carried out by the producer, its authorised representative (qualified person) and the person responsible for training in the user's company.

In the case of lending, demonstration, display, sale, discount trading or user training, these instructions for use and maintenance (AWA) must be enclosed/attached.

Picture credits

Question to the persons responsible for training and work materials:

Have you read, understood and given instructions on parts 1 to 4?

A&H Services offers an extensive inspection and testing service for all its in-house products.

Appeal

If you have questions, if a component is damaged, seems to have changed or might be damaged, whenever you have any observations or suggestions to make, please take a photograph and send it to us via email at office@air-work.com (preferably) or via WhatsApp to +41 79 477 54 13.

In 90% of all cases we can answer immediately, thus saving you time and postal charges. Having an image will help us greatly and, together with your short description, the problem can usually be identified very quickly.

www.air-work.swiss